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Controlled Flow Instrument For Microwave Assisted Chemistry With high Viscosity Liquids and Heterogeneous Mixtures

Abstract

A controlled-flow microwave instrument is disclosed for chemical synthesis using heterogeneous or highly viscous starting materials. The instrument includes a microwave source for generating electromagnetic radiation in the microwave frequencies, a microwave cavity in wave communication with the source for exposing compositions placed therein to microwave radiation, a microwave-transparent pressure resistant reaction vessel in the cavity, a source reservoir for starting materials and related compositions, a pump in communication with the source reservoir for pumping heterogeneous or highly viscous materials from the source reservoir to the reaction vessel, and a pressure-resistant valve between the pump and the reaction vessel for isolating the reaction vessel from the pump and the source reservoir during application of microwave energy to compositions in the vessel and

from any resulting high pressures generated therein.